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FOR

BOX COVERED WITH A NON-WOVEN MATERIAL

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[001] The present invention relates in general to a box used for packaging certain objects, and in particular to a box having a body formed from a blank. Such a box may be formed from cardboard material, plastic, or some other similar material. The box may be used to hold tubes or pots containing cosmetic products or care products, for example.

[002] Traditionally, boxes used in the field of cosmetics are formed by folding a precut blank. The precut blank may include a support made of cardboard or synthetic materials, for example. These materials may or may not be transparent. It may be possible for the support to be printed on one or both sides, using known techniques, such as, for example, screen printing, offset printing, or intaglio printing. A varnish or a synthetic film may be deposited on the printed side. Such boxes may be characterized by a relatively smooth feel.

[003] However, the blanks covered with a varnish or with a thin synthetic film, which are traditionally used for manufacturing boxes, may be difficult to handle. In particular, after the blanks have been cut, they are stacked on top of each other before each is folded to form a box. Because the surface of the blanks is smooth, as described above, they may slide against each other. It thus may be difficult to keep the blanks superposed and aligned so as to form a stack without having to place the blanks in a tray. Furthermore, to form the boxes, each of the blanks may be taken from the stack one after the other before being folded to form a box. Because of the surface finish of the blanks, static may occur and may prevent easy removal of the blanks from the stack. This may result in several blanks remaining stuck together.

[004] In the field of the packaging of cosmetic and care products, there is an unending search for new designs, in terms of the visual appearance, functional

characteristics, and sensory perception, for example, touch or feel, of packaging boxes.

Thus, a need has arisen for replacing the feel of conventional boxes, such as those formed of thermoplastic or cardboard material, for example, with warmer, gentler feels such as those afforded by fabrics. Further, a need exists to provide boxes that facilitate handling, especially during the formation of the box from the blank.

[005] Patent Application JP 08 050452 describes a printed material for manufacturing, in particular, a label, comprising a printed support covered with a layer of porous material that transmits light. The porous material may be a non-woven material impregnated with a transparent ink in certain regions corresponding to regions of the support on which patterns are printed so as to disclose these patterns in sharp contrast with the other regions. This layer of porous material also may be bonded onto boxes or tins of food which in other respects are manufactured in a conventional way.

[006] By bonding a non-woven material onto the boxes, an additional stage is generated in the method of manufacture of the boxes. In addition, bonding a non-woven material onto the boxes may be relatively difficult when the boxes are already assembled. For example, the stage of bonding the non-woven material onto three-dimensional objects may be relatively tricky, especially when there are several faces and various corners to be covered. In addition, already-assembled boxes carry the risk of deforming when the non-woven material is applied, particularly when there is nothing inside the boxes to stabilize their structure. Such a box may therefore be relatively difficult to produce and thus may have a relatively high cost of manufacture.

[007] Further, printing onto non-woven materials has been found to present problems, particularly in terms of printing resolution. These problems may be a result of the coarse characteristics often associated with these non-woven materials.

[008] Hence, it may be desirable to produce a box designed for packaging products that has a feel and a visual appearance that differs from those of conventional boxes.

[009] Also, it may be desirable to provide a box at low cost that allows for good printing resolution, and that has a feel similar to that of fabrics.

[010] Further, it may be desirable to facilitate the manufacture of a packaging box, in particular, by making the blanks that form the boxes easier to handle, for example.

[011] It should be understood that the invention could be practiced without performing one or more of the aspects described above. Other aspects will become apparent from the detailed description which follows.

[012] As embodied and broadly described herein, the invention includes a box comprising a body obtained by folding a precut blank. The blank may comprise a support printed on at least one surface and at least one sheet of non-woven material. The sheet of non-woven material may be arranged on the printed surface of the support and may be at least somewhat transparent such that the printing of the support is visible through the sheet.

[013] A box may be provided that may have the feel of a fabric while maintaining good printability characteristics, particularly in terms of resolution. Apart from the sensation it affords, this feel may provide functional advantages in that it may improve the grip on the box. For example, in the field of cosmetics and care products, such as when the box is intended to house a pot or tube of liquid or creamy product that is to be applied using the fingers, it may be advantageous to improve the grip on the box.

[014] Furthermore, when manufacturing the box, applying the non-woven material directly to the blank prior to folding may be relatively simple to achieve. For

example, it may be applied from a reel and be paid out directly onto the support, which has already been printed on, as it travels past the reel.

[015] Furthermore, the use of a non-woven material to cover at least one surface of the support of the blank may prevent the blanks from sliding against each other and also may keep a stack of blanks intact without having to place the blanks in a tray. In addition, extraction of each blank from the stack prior to folding the blank to form the box may be easier.

[016] In accordance with another aspect, the box may comprise a body formed from a blank. The blank may comprise a support having a first surface and a second surface, with at least the first surface have printing thereon. The blank also may comprise at least one sheet of non-woven material. The at least one sheet of non-woven material may be arranged on the first surface of the support. The at least one sheet of non-woven material also may be at least partially transparent so that the printing on the first surface of the support is visible through the sheet of non-woven material.

[017] In an exemplary embodiment, a sheet of non-woven material may be provided on both surfaces of the support. As the non-woven material may not be as abrasive as the raw cardboard used to make conventional boxes, the objects packaged in the box, for example, objects with hot stampings, have a minimized risk of becoming damaged by rubbing against the inside of the box.

[018] According to another embodiment, the sheet of non-woven material may be secured to the support by bonding, for example, via an adhesive bonding or an adhesive-varnish bonding.

[019] The support may be made of a cardboard material having a grammage ranging from about 150 g/m² to about 500 g/m². For example, the grammage may range

from about 250 g/m² to about 400 g/m². The support could be made rigid enough to protect the object it packages, but not too rigid so that it hampers folding of the support to form the box.

[020] Alternatively, the support may be made of a material chosen from a thermoplastic material, such as, for example, high-density polyethylenes, polypropylenes, polyvinyl chlorides and polyethylene terephthalates. Its thickness may range from about 150 µm to about 800 µm. For example, the thickness may range from about 300 µm to about 600 µm.

[021] The non-woven material may be formed of thermoplastic fibers, for example polyolefin fibers, such as polypropylene fibers or polyethylene fibers, or of polyester fibers. Its color may be white or slightly tinted. The feel obtained from the non-woven material may vary according to the nature and thickness of the non-woven material. It may be possible to obtain highly varied visual effects and feels ranging from silky to rough and passing through a multitude of grades, depending on the desired characteristics.

[022] The sheet of non-woven material may have a thickness ranging from about 50 µm to about 800 µm. For example, the thickness may range from about 100 µm to about 400 µm. Optionally, the thickness may range from about 100 µm to about 200 µm. The thickness could be selected to allow the sheet to have sufficient transparency for the printed decoration to be visible and also provide the desired feel.

[023] In yet another aspect, the box may comprise a body formed by folding a blank, wherein the blank comprises a support having a first surface and a second surface. At least the first surface may have printing thereon and may form an outer surface of the box. The blank also may comprise at least one sheet of non-woven material comprising thermoplastic fibers. The at least one sheet of non-woven material may be arranged on

the first surface of the support and may be at least partially transparent so that the printing on the first surface of the support is visible through the at least one sheet of non-woven material.

[024] The at least one sheet of non-woven material may comprise a first sheet of non-woven material on the first surface and the box may further comprise a second sheet of non-woven material on the second surface. The second surface may have printing thereon and the second sheet may be at least partially transparent so that the printing on the second surface is visible through the second sheet of non-woven material.

[025] The blank may comprise score lines and the blank may be folded at the score lines.

[026] According to another aspect of the invention, the method of manufacture of the box comprises the following steps: printing a support on at least one side; coating the printed surface of the support with an adhesive; applying a sheet of non-woven material to the printed surface of the support; scoring and cutting the support so as to obtain a blank which is folded along the scored lines to form the box.

[027] Alternatively, prior to scoring and cutting, the second surface of the support is coated with an adhesive and a second sheet of non-woven material is applied to the second side.

[028] According to yet another aspect, a method of manufacturing a box may comprise providing a support having a first surface and a second surface, applying printing to the first surface of the support, coating the printed first surface of the support with an adhesive, applying a sheet of non-woven material to the printed first surface of the support, and folding the printed support to form the box.

[029] The term “providing” is used herein in a broad sense, and may refer to, but is not limited to, making available for use, enabling useage, giving, supplying, obtaining, getting a hold of, acquiring, purchasing, selling, distributing, possessing, making ready for use, and/or placing in a position ready for use.

[030] The method may further comprise scoring the support to form score lines. The folding of the support may comprise folding the support at the score lines.

[031] The method also may comprise cutting the support to form a blank. The folding may comprise folding the blank to form a box. Prior to scoring and cutting, the second surface may be coated with an adhesive and a second sheet of non-woven material may be applied to the second surface. Printing also may be applied to the second surface. The first surface may form an outer surface of the box.

[032] According to another aspect, a blank may comprise a support having a first surface and a second surface, wherein at least the first surface has printing thereon, and at least one sheet of non-woven material. The sheet of non-woven material may be arranged on the first surface of the support, and the sheet of non-woven material may be at least partially transparent so that the printing on the first surface of the support is visible through the sheet of non-woven material.

[033] Besides the structural and procedural arrangements set forth above, the invention could include a number of other arrangements, such as those explained hereinafter. It is to be understood that both the foregoing description and the following description are exemplary. The accompanying drawings are included to provide a further understanding of the invention and are incorporated in and constitute a part of this specification. The drawings illustrate exemplary embodiments of the invention and, together with the description, serve to explain certain principles. In the drawings,

[034] Fig. 1 is a sectional view of an embodiment of a blank;

[035] Fig. 2 is a sectional view of another embodiment of a blank;

[036] Fig. 3 is a perspective view of a cut blank for forming a box;

[037] Fig. 4 is a perspective view of an embodiment of a box formed from the blank of Fig. 3; and

[038] Fig. 5 is an embodiment of a method for forming the box of Fig. 4.

[039] Reference will now be made in detail to the exemplary embodiments of the invention, examples of which are illustrated in the accompanying drawings. Wherever possible, the same reference numbers will be used throughout the drawings to refer to the same or like parts.

[040] An exemplary embodiment of a blank 10, as seen in Fig. 1 may have a transparent or non-transparent printable support 20. The printable support 20 may be made of a cardboard material, or of a thermoplastic material, such as, for example, high-density polyethylene, polypropylene, polyvinylchloride, or polyethylene terephthalate. For example, in the case of a cardboard support, the cardboard may have a grammage below about 400 g/m², although other grammages may work as well. Alternatively, in the case of a high-density polyethylene or a polypropylene, its thickness may range from about 300 µm to about 400 µm, although other thickness may work as well. Other materials may also be used.

[041] A first surface 21 of the support 20 may be printed so as to convey information relating to the identity, make of, brand name of, or other information relating to the product, or any other printed matter, including for purely decorative purposes. The surface 21 may form the outside surface of the box when the support 20 is folded. Printing

may be by any known technique, such as, for example, numerically controlled printing, screen printing, intaglio printing, flexographic printing, or offset printing.

[042] A layer of adhesive 40, for example, an adhesive, an adhesive-varnish, or other similar adhesive material, may be deposited on the printed surface 21 of the support 20. Drying may be performed in a conventional oven when a conventional adhesive is used. For example, when the support 20 is made of a cardboard material, the adhesive layer 40 may be a UV-drying varnish. This will allow drying without using hot air, which may cause the cardboard to cockle.

[043] A sheet 30 of non-woven material, which may have been carded to raise at least some of the fibers to provide a fabric feel, for example, covers the printed surface of the support 20. The sheet 30 may be bonded to the support 20 via the layer of adhesive 40. Such a sheet of non-woven material 30 may be formed of an intermingling of fibers, the tightness of which may vary. The fibers may be synthetic fibers and welded together in a conventional way, for example, by hot rolling. Hot rolling includes passing the fibers between two rolls, one of which is heated and has bosses facing the other roll, to form spot welds. For example, the non-woven material may be made of polyolefin fibers, for example, polypropylene fibers or polyethylene fibers. Alternatively, the non-woven material may be made of polyester. The thickness of the sheet 30 may range from about 100 μm to about 200 μm , although other thickness may also work.

[044] In an exemplary embodiment, the printed information on the surface 21 of the support 20 is visible through the sheet 30 of non-woven material because of the contact transparency of the sheet 30 of non-woven material.

[045] In an exemplary embodiment, the second surface 22 of the support 20 also may be printed. For example, this would make it possible to provide additional information on the inside of the box.

[046] Another exemplary embodiment of the blank 10 is shown in Fig. 2. In this embodiment, the second surface 22 of the support 20, which is the surface that is intended to constitute the inside surface of the box, may be covered with an adhesive layer 50, for example, an adhesive or an adhesive-varnish with good adhesive properties.

[047] A sheet 60 of non-woven material as previously described, which may have been carded to raise at least some of the fibers to provide a fabric feel, for example, may cover the surface 22 of the support 20, to which it is bonded by means of the adhesive layer 50. This sheet 60 of non-woven material may be identical to the sheet 30 provided on the outside of the box or may be made of a different material. In this embodiment, the surface 22 may be printed before being coated with the adhesive layer 50.

[048] Fig. 3 shows an embodiment of a blank prior to folding and Fig. 4 shows an embodiment of a box 100 comprising a body obtained by folding the blank shown in Fig. 3. Such a box may have a front panel, a rear panel connected by two side panels, two openings, one at each end of the body.

[049] Fig. 5 shows an exemplary method of manufacturing the box 100. The method includes providing the support 20 having a first surface 21 and a second surface 22 (step 510). For example, the support 20 may be paid out from a reel. A printing may be applied to the surface 21 (step 520), such as, for example, by numerically controlled printing. The printed surface 21 may then be coated with an adhesive 40 (step 530), such as, for example, UV-drying varnish. The adhesive 40 may be applied either in a second pass or on-line. A sheet of non-woven material 30, such as, for example, a polyolefin, may

be applied to the surface 21 (step 540). The assembly may then be dried using a UV system. The support 20 may then be scored to provide score lines (step 550) and then cut to obtain a blank 10 (step 560). Because of its intrinsic stretchability properties, the sheet of polyolefin non-woven material deforms during scoring without the risk of tearing or of scoring inappropriately. Other materials may provide similar properties and are understood to be within the scope of invention. The blank 10 may then be folded along the scored lines and bonded or simply assembled according to the conventional techniques for forming the box 100 (step 570).

[050] According to an alternative form of this method, the second surface 22 of the support 20 may be printed thereon prior to the scoring and cutting of the support 20.

[051] According to yet another alternative, the second surface 22 of the support 20, which may or may not be printed, may be coated with an adhesive 50, such as, for example, a UV-drying varnish, prior to the scoring and cutting stage. A second sheet of non-woven material 60 may then be applied to the support 20 prior to the scoring and cutting of the support 20.

[052] In the foregoing detailed description, reference has been made to certain preferred embodiments of the invention. It will be apparent to those skilled in the art that variants can be made to the structure and methodology. Thus, it should be understood that the invention is not limited to the examples and embodiments discussed in the specification. Rather, the present invention is intended to cover variations and modifications.